

Recovery gel:

$$\text{backbone} = 100 \text{ ng}/\mu\text{L} = 20 \text{ ng}/\mu\text{L}$$

$$\text{Insert} = 200 \text{ ng}/5 \mu\text{L} = 40 \text{ ng}/\mu\text{L}$$

① Volume of backbone

$$60 \text{ ng} \rightarrow 3 \mu\text{L}$$

② Calculate moles backbone

$$2776 \text{ bp} \cdot 660 \text{ g/mol bp} \\ = 1.83 \cdot 10^6 \text{ g/mol}$$

$$60 \text{ ng} / (1.83 \cdot 10^6 \text{ g/mol}) \\ = 3.27 \cdot 10^{14} \text{ mol}$$

③ Determine moles of insert

$$3.27 \cdot 10^{14} \text{ mol backbone} \times 4 \\ = 1.31 \cdot 10^{13} \text{ mol insert}$$

$$408 \text{ bp} (660 \text{ g/mol bp}) \\ = 2.69 \cdot 10^5 \text{ g/mol}$$

$$1.31 \cdot 10^{13} \text{ mol insert} \cdot 2.69 \cdot 10^5 \text{ g/mol} \\ = 35.3 \text{ ng}$$

④ Volume of insert